



# AS3/AS3E User Manual

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# 1. Notification

## 1.1. Disclaimer

This document, and all other related products, such as device, firmware, and software, is developed by ATrack Technology Inc. thoroughly. At the time of release, it is most compatible with specified firmware version. Due to the functionalities of the devices are being developed and improved from time to time, the change in the protocol, specification, and firmware functions are subjects to change without notice. ATrack Technology Inc. is obligated to modify all the documentation without the limitation of time frame. A change notice shall be released to ATrack Technology Inc. customers upon the completion of document modification.

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## 1.2. Copyright

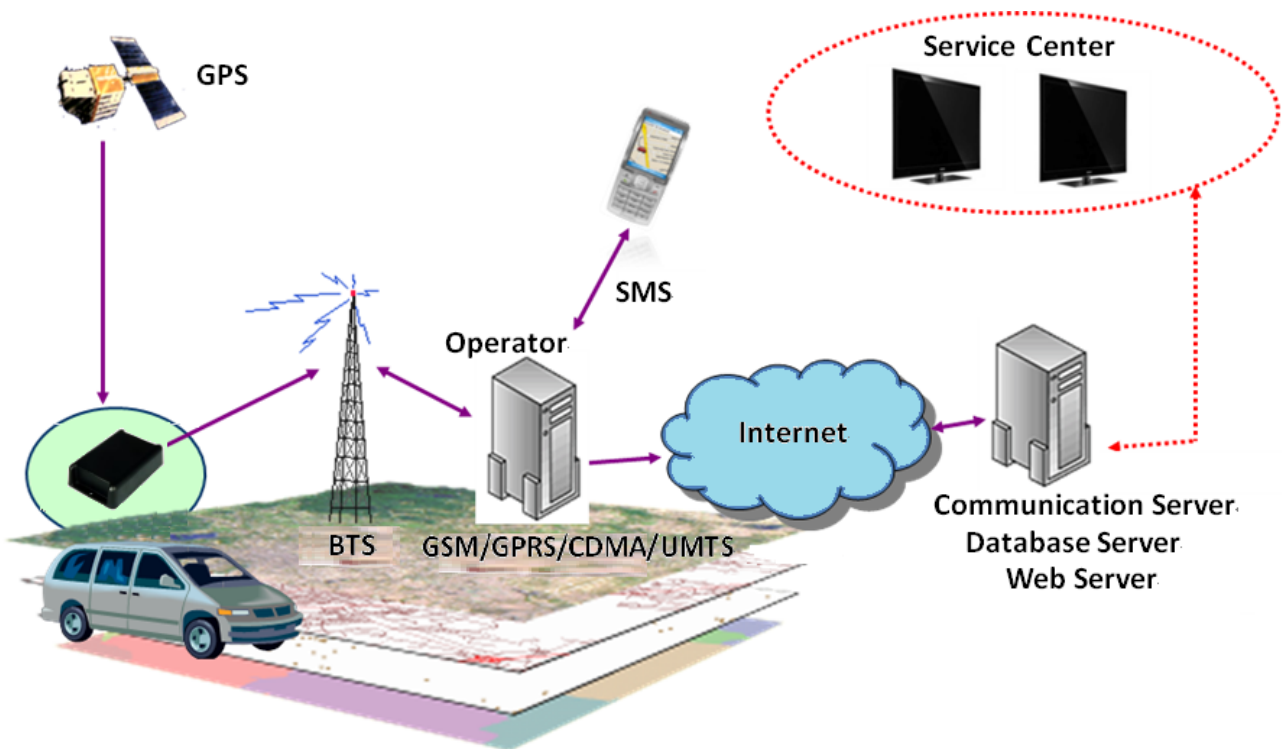
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## 1.3. Warning

Connecting the wire inputs can be hazardous to both the installer and your vehicle's electrical system if not done by an experienced installer. This document assumes you are aware of the inherent dangers of working in and around a vehicle and have a working understanding of electricity.

## 2. Overview

From the following diagram, the AS3/AS3E GPS receiver receives incoming signals from each orbiting satellite. These signals consist of information such as satellite's position and the time that the signal was transmitted by each satellite. The receiver analyzes these data in order to determine how far away each satellite is and it uses the triangulation method to calculate the vehicle's exact position. Once the positioning data along with other event data are gathered, they will be transmitted to the service center across a Mobile network (e.g. GSM/GPRS) or via SMS. The communication is bidirectional, which means you can control the AS3/AS3E remotely across a Mobile network or via SMS.



System Architecture

## 3. Installation

### 3.1. Package Content

When you open the package, please verify that you received the following device and accessories:

- AS3/AS3E Device \* 1



- Power/IO Cable \* 1



- GPS Antenna \* 1

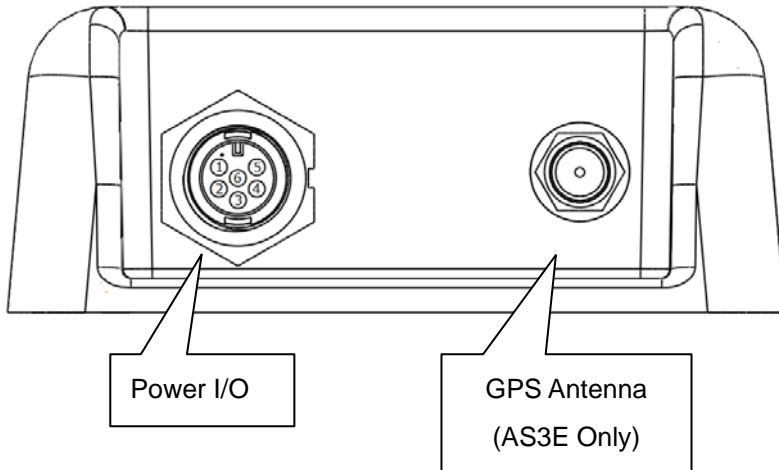


- Magnet Mount Kits (Optional)



### 3.2. Power I/O Connector

The following figure shows power I/O connector and its pin number.



The following table describes the function of each pin.

Power I/O Connector				
Pin#	Function	Color	Designation	Note
1	Main power input	Red	PWR	DC 9V~40V input
2	ACC Input	Yellow	ACC	Ignition status positive trigger input
3**	General Input2 (Default) Analog Input1 1-Wire Protocol Input * RS232 Transmit data	Green	IO1	Positive trigger input Analog input (DC0V~40V) 1-Wire Data input See <a href="#">Chapter 5.1</a>
4**	General Input1 General Output1 (Default)	Blue	IO2	Negative trigger input Open collector output (Max.300mA)
5**	General Input3 General Output2 (Default) RS232 Receive data	White	IO3	Negative trigger input Open collector output (Max.300mA) See <a href="#">Chapter 5.1</a>
6	Power ground	Black	GND	

\* The 1-Wire® Protocol supports up to three 1-Wire™ devices simultaneously, which means you can have one (iButton®, DS1990A) and two 1-Wire™ temperature sensor probes (DS18B20).

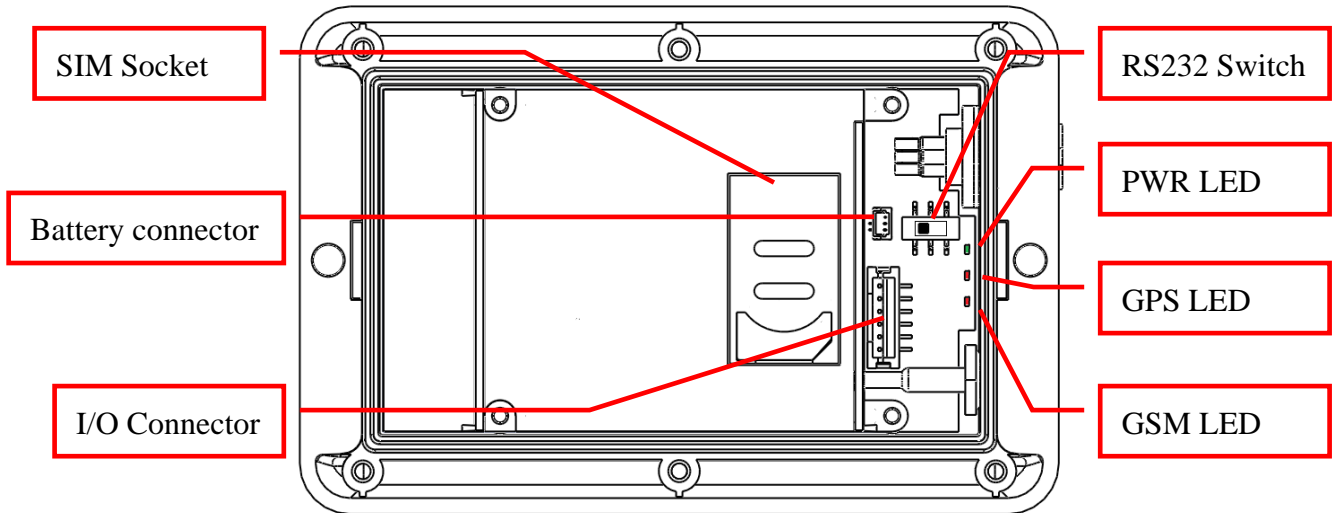
\*\* You may configure the [AT\\$IOCG](#) command to change these specific I/O pins to any of those functions mentioned as above.



Please do not connect a positive voltage to any output pin!

### 3.3. Internal Connectors and LED indicators

The following figure shows the internal connectors and its functionality.



- **SIM Socket:**

The AS3/AS3E supports a SIM card with either of these two operating voltages: 1.8V (ISO/IEC 7816-3 class C) or 3V (ISO/IEC 7816-3 class B).

- **RS232 Switch:**

The pin#3(Green) and pin#5(White) of power I/O connector can be used for either general I/O or RS232. The RS232 switch is used for the configuration. See table below for detail description:

Mode	Switch setup	Description
RS232 Mode		Pin#3(Green) and Pin#5(White) are acting as RS232 Tx and Rx. This is manufactory default mode.
I/O Mode		Pin#3(Green) and Pin#5(White) are acting as general I/Os.



Power off the device and make sure the wire connection before adjust RS232 switch.

● LED Indicators:

LED	Indication	Description
PWR (Green)	Solid On	In full operation mode
	1 blink (0.1 sec.) in every 10 sec.	In sleep mode
	1 sec. On, 1 sec. Off	GPS module off, External power lost, running on backup battery
GPS (Red)	0.7 sec. On, 0.7 sec. Off	Searching for GPS signal
	Solid On	Position get fixed
GSM (Red)	Off	GSM module off
	0.7 sec. On, 0.7 sec. Off	Searching for GSM signal
	0.2 sec. On, 2 sec. Off	Registered on GSM network
	2 blinks in every 2 sec.	Connected to GPRS network
	Continuous blinking	SIM PIN Error

Note: In the case of SIM PIN Error, the device will check the AT\$SPIN every 10 minutes and try to access the SIM again. The PIN will be validated 3 times and if it fails the last attempt, including the first inserting time, the SIM card will be locked. Once the SIM is locked, you need to contact your GSM carrier for the PUK in order to unlock the SIM card using your cell phone.



### 3.4. DB9 Connector Wiring Diagram

For connecting the device to PC when configuration is needed, the following diagram shows how to solder/connect the DB9 connector.

#### 3.4.1. Using ATrack Serial Cable

Material needed: ATrack Serial Cable x 1, AS3 Power I/O cable x 1

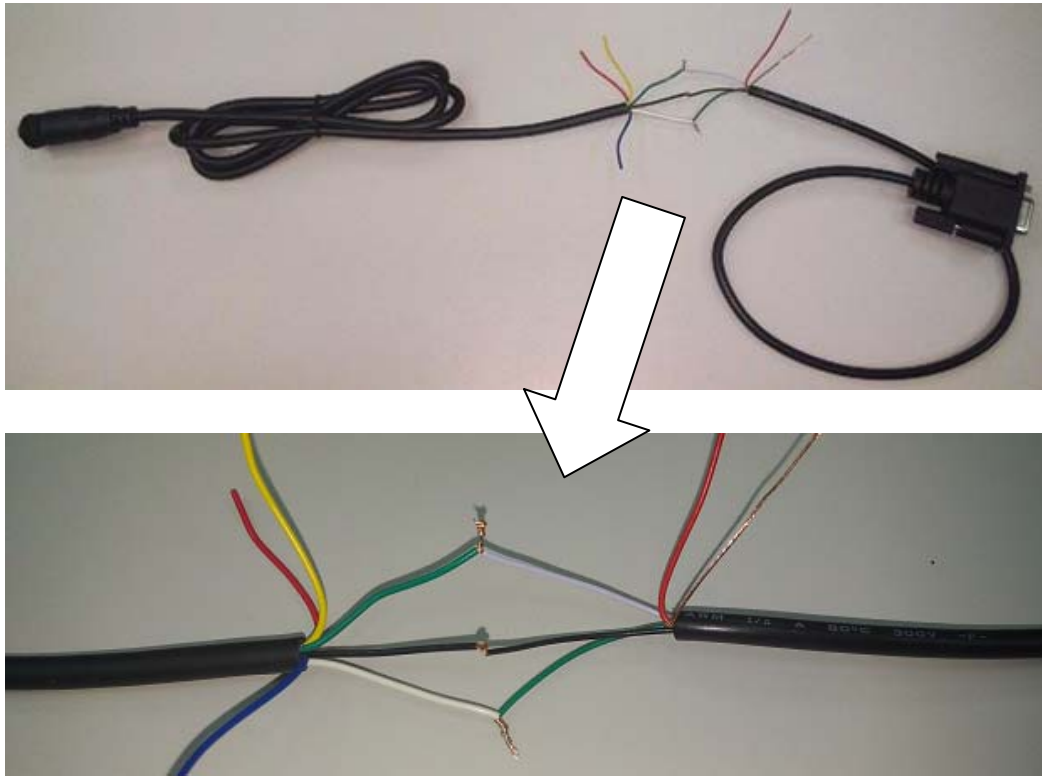
1. Cut the ATrack Serial Cable and peel the Green, White, and Black wires as shown:



2. Peel the AS3 Power I/O Cable (Green, White, and Black wires) as shown:



3. Connect two cables together with **Green – White, Black – Black, White – Green** as shown:



Note: The Ground (Black) wire might need to be connected to the power supply ground as well so the voltage level is based on the same ground.

### 3.4.2. Connecting DB9 Female Connector

Material needed: AS3 Power I/O cable x 1, DB9 Female connector x 1

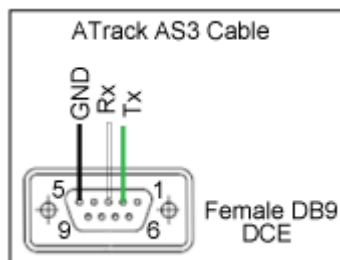


The ping connection is

**Green – 2**

**White – 3**

**Black – 5**



### **3.5. GPS Antenna Installation**

The AS3/AS3E determines its position by communicating with Global Positioning Satellites through an external GPS antenna. The location where the AS3/AS3E GPS antenna is installed will have great effect in the overall performance of the GPS receiving. Please note that the following interior conditions may cause bad GPS reception when a GPS antenna is installed inside interior of vehicle:

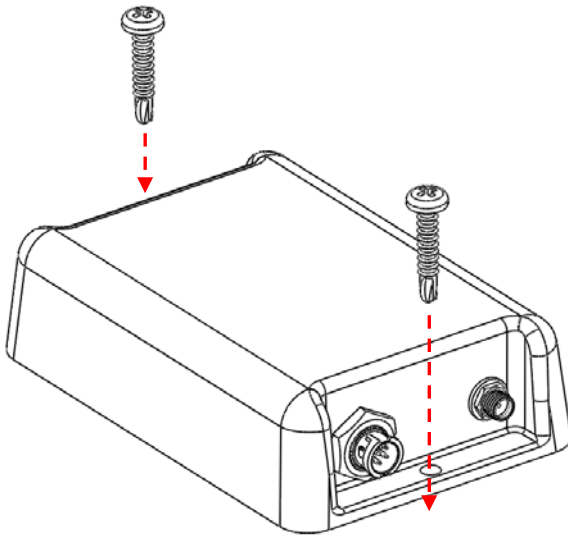
- Windows with metallic tint
- Windshield mounted radio antenna
- Windows with solar reflective covers
- The MP3 FM transmitter may interfere with GPS reception

### 3.6. Mounting Methods

The AS3/AS3E can be either surface or magnet mounted by using appropriate screws.

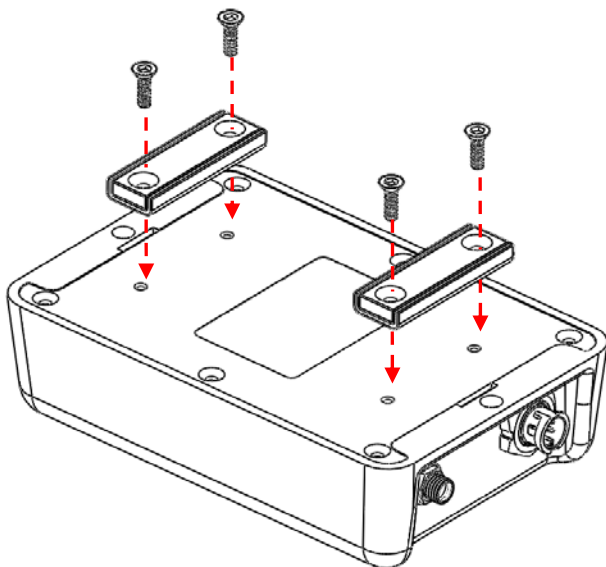
#### 3.6.1. Surface Screw Mount

Use two #10 screws (diameter=4.8mm) to fix AS3/AS3E on a surface.



#### 3.6.2. Magnet Mount

Use magnet mount kits to install magnets on AS3/AS3E device.



The magnets must be handled with care to prevent personal injury as they are extremely strong.